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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,348	02/09/2004	Sandrine Cussat-Blanc	Q79477	6466

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/773,348	Applicant(s) CUSSAT-BLANC ET AL.	
	Examiner Audrey Y. Chang	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/9/2004</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

1. **Claims 8-10 are objected to because of the following informalities:**

(1). A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, **both** claims 8 and 9 recite the broad recitation "a broadband optical communication system" and the claims also recite "in particular a WDM or DWDM communication system" which is the narrower statement of the range/limitation. Claim 10 inherits the objection from its based claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2872

3. Claims 1-6, 8-9 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by the patent issued to Garrett et al (PN. 6,760,511).

Garrett et al teaches an *optical communication system* that is comprised of an *optical add-drop multiplexer (OADM)* for wavelength divisional demultiplexing and multiplexing optical signal wherein the OADM comprises a *wavelength separating-routing (WSR) apparatus* for “(de-) multiplexing” optical signal. The wavelength separating-routing apparatus comprises an *input port* (110-1, Figure 1A) serves as the *multiple channel* for inputting optical signal having a plurality of wavelength channels and a *plurality of separated output ports* (110-2 to 110-n, $n \geq 3$), serves as the *at least first and second separated channel ports*, a *diffraction grating* (101) serves as the *diffraction unit* disposed between the multiple channel port (110-1) and the separated channel ports (110-2 to 110-n) for separating and dispersing (or deflecting) different wavelength components or channels of the optical signal into different optical paths and the separated wavelength channels are directed by the diffraction grating to a *channel micromirror* (103) having a *plurality of mirrors* (please see Figure 1B) via a *focusing lens* (102). The channel micromirror having a plurality of mirrors that are *individually angled* and controlled to receive and reflect different channel of the optical signal from the diffraction grating and back to the diffraction grating at different angles, (please see Figures 1A and 1B, column 6, line 61 to column 8, line 34).

With regard to claims 2-3, Garrett et al teaches that the different channels of the optical signal from the diffraction grating are *focused* to the channel micromirror (103) via a *focusing lens* (102) and the focusing lens defines a *conjugate plane* with respect to the diffraction grating and the plurality of mirrors of the channel micromirror are disposed along the *conjugate plane*, (please see Figure 1A).

With regard to claims 4-5, Garrett et al teaches that the mirrors in the channel micromirror are *pivotal or deflectable* along X-axis, (please see Figures 1A and 1B) which means the mirrors can be individually angled with respect to Y-axis which is a longitudinal axis of the diffraction grating. It is implicitly true that the diffraction grating can be rotated about the longitudinal axis.

Art Unit: 2872

With regard to claim 6, Garrett et al teaches that a plurality of *collimators* (110, Figure 1A) is used between the diffraction grating and the input port or multiple channel port (110-1) and output ports or separated channel ports (110-2 to 110-n).

With regard to claims 8 and 9, Garrett et al teaches the wavelength separating routing apparatus is used in an *add-drop multiplexer communication system* wherein optical transmitter and optical receiver for transmitting and receiving the optical signal are implicitly included.

With regard to claim 12, the method for demultiplexing the optical signal utilizing the diffraction grating and the channel micromirror is included in the device description above.

This reference has therefore anticipated the claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Garrett et al in view of the patent issued to Chen et al (PN. 6,563,977).**

The wavelength separating routing apparatus used to (de-)multiplex optical signal taught by Garrett et al as described for claim 1 above has met all the limitations of the claim. This reference however does not teach explicitly that the diffraction grating includes a spherical mirror to focus the optical beams. Chen et al in the same field of endeavor teaches an optical multiplexing and demultiplexing device wherein the diffraction grating (122, Figure 9) is designed to include a spherical mirror to also focus the diffracted light beams from the diffraction grating to the mirror (126, column 16,

Art Unit: 2872

lines 16-34). It would then have been obvious to one skilled in the art to apply the teachings of **Chen et al** to modify the device of **Garrett et al** to make the diffraction grating also have a spherical mirror function so that the diffraction grating can provide both the dispersing and focusing functions to the optical signal for the benefit of eliminating the use of an additional focusing lens to make the device more compact in size.

6. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Garrett et al in view of the patent issued to Chang et al (PN. 5,392,154).

The wavelength separating routing apparatus used to (de-)multiplex optical signal taught by **Garrett et al** as described for claim 1 above has met all the limitations of the claim.

Garrett et al teaches it is important to dynamically manage the optical power levels and then to achieve power equalization at each stage of the optical communication system, (please see column 3, lines 21-37). **Garrett et al** also teaches that a *servo-control assembly* (440, Figure 4A) can be provided to manage the power level of the output ports at channel-by-channel basis to achieve desired power equalization, (please see column 11, lines 45-55). This reference however does not teaches explicitly to use a first and second amplifier stage parallel to each other such that each amplifier is adapted to amplify the optical signal in a different wavelength band. **Chang et al** in the same field of endeavor teaches a self-regulating multiwavelength optical amplifier module for an optical communication system wherein a plurality of amplifiers (208-1 to 208-4, Figure 2) arranged in a parallel fashion are used to amplify therefore regulate and equalize power of the optical signals from the demultiplexer in a channel-by-channel basis, (please see columns 5, lines 48-69). Each of the parallel arranged amplifiers is placed in an optical path of a demultiplexed signal from the demultiplexer and to amplify the signal based on a specific wavelength band. It would have been obvious to one skilled in the art to apply the teachings of **Chang et al** to use a plurality of amplifiers each at a different channel in the servo-control assembly of

Art Unit: 2872

Garrett et al to amplify the optical signal in a channel-by-channel basis for the benefit of achieving the desired optical equalization of the output channels and reduce inter-channel cross-saturation problems.

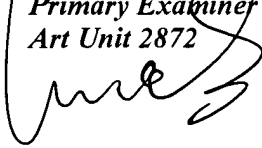
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.